

VASE LIFE STUDY IN DIFFERENT VARIETIES OF GLADIOLUS

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ABSTRACT

Experiment was carried out to find out the best variety in vase taking 20 genotypes of gladiolus grown in Department of Floriculture and Landscaping. Study on vase life indicated that gladiolus varieties like White prosperity, NG-35, Friendship white, Victor berge, Oscar and Jessica exhibited better performance with respect to water uptake and gain in fresh weight up to 7th day of study while Novalux, Huntingsong, Princess margarate rose, Bluesky and Precillia recorded greater vase life (7.11-6.11 days). Varieties like Charisma, Grandpics, Ocillia, Novalux, Princess margarate rose performed better with respect per cent opening of floret in a spike while varieties such as Purple flora, White prosperity, Victor berge, Friendship white, Oscar and NG-35 recorded bigger florets with more length and width.

KEYWORDS: Vase Life, Shelf Life, Longevity, % Water Uptake, % Fresh Weight Gain

INTRODUCTION

Gladiolus, a member of the family Iridaceae and subfamily Ixioideae, is one of the most popular ornamental bulbous plants grown commercially in many parts of the world for its fascinating flowers with variety of colours, huge form of florets and good keeping quality. As a cut flower it has earned its place of importance owing to its utility in bouquets, in indoor decoration and flower arrangements. Further, it may be stated that the shelf life or longevity of flowers which is an important aspect of cut flower quality varies with species and cultivars. Although several other factors influence the shelf life of cut flowers, it is largely determined by the genetic makeup of the flower species and even within the same species, the variation in shelf life is also observed among different cultivars. Hence, studies on vase life of gladiolus cultivars assume greater significance for determination of their relative performance with respect to these important characters.

MATERIALS AND METHODS

The present study was carried out at Department of Floriculture and Landscaping, College of Agriculture, OUAT, Bhubaneswar taking 20 gladiolus varieties. For this experiment flower spikes at colour break stage (*viz.*, basal floret showing colour) were cut with a sharp knife by giving a slanting cut from plants grown in the experimental plots. Immediately after harvest these were kept in the plastic buckets containing cool water so that the basal part of the flower spikes were immersed in water. Then these were taken to the department laboratory and were kept in conical flask of 1000ml size containing 500 ml of distilled water in vertical position under ambient condition. Three spikes were kept per variety per replication and the average of these three was taken for analysis. Observations like Per cent water uptake by flower spike, Percent change in fresh weight of flower spike, Days taken for opening of top floret, Length and width of floret, Vase life, Percentage opening of floret, Longevity of open floret were taken. All the data concerning vase life were analyzed statistically. The data recorded in percentage were transformed to the corresponding angular values for analysis. The analysis of variance table was prepared. The effects were tested by 'F' test at 5 per cent level of significance.

The critical difference at 5 per cent level was calculated for comparing the treatment means.

RESULTS AND DISCUSSIONS

Gladiolus is one of the most important bulbous flowers grown commercially in various parts of the world. It has great economic value as a cut flower which is used for indoor decoration and in vases, particularly in urban areas. However, its usefulness as cut flower for indoor decoration and flower arrangement is mostly related to the vase life or shelf life of the flower spike. It is observed that different varieties under same flower crop including gladiolus differ themselves with respect to their vase life. The varieties possessing longer vase life is of greater importance with respect to its commercial value and consumer acceptance. Hence, the present investigation on study of relative performance of 20 gladiolus genotypes with respect to their vase life assumes greater significance. The results of the study have been discussed as follows:

- **Percent Water Uptake by Flower Spike**

It was observed that percent water uptake by the flower spikes increased in a progressive manner in all the varieties up to 7th day of commencement of the experiment and it still continued up to 9th day in Purpleflora, Bluesky, White Prosperity, Grandpics, Charisma and Ivory Precillia. However, on 7th day maximum uptake of water was observed in NG-35(6.84%). Other varieties showing higher water uptake were Friendship White, Charisma, Grandpics, Bluesky, Victorberge, Oscar, Novalux and Jessica and the performance of these varieties was statistically comparable with each other. Higher uptake of water in these varieties might be due to well developed water conducting tissues particularly xylem vessels.(Table 1)

- **Percent Change in Fresh Weight of Flower Spike**

It was observed that fresh weight of spike on percentage basis increased in a progressive manner for most of the varieties upto 7th day from the commencement of the study except Purpleflora, Bluesky, Plumtart, Grandpics and Ivory Precillia in which there was reduction in fresh weight as compared to the values recorded on 5th day. The varieties like Hunting song, Victorberge, Traderhorn and Novalux excelled others by exhibiting increased fresh weight upto 9th day of study. Apart from these four varieties, other varieties which performed better upto 7th day were Precillia, White Prosperity, Jessica, Friendship White, Princess margarate rose, Mascagni, Oscar and NG-35 which were at par with each other. Increase in fresh weight in these varieties might be due to increase in water uptake and reduction of fresh weight observed in Purpleflora, Bluesky, Plumtart, Grandpics and Ivory Precillia might be due to higher transpiration loss of moisture from spike resulting from greater stomatal opening in these varieties inspite of higher uptake of water. Regulation of stomatal opening might be largely influenced by the genetic makeup in addition to environmental factors. It was seen that among the 20 genotypes under study, varieties like White Prosperity, NG-35, Friendship White, Victorberge, Oscar and Jessica exhibited better performance with respect to water uptake and gain in fresh weight as compared to others. (Table 2)

- **Days Taken for Opening of Top Floret**

It was observed that Charisma took maximum time (8.88days) for opening of top floret followed by Grandpics, Ocillia, Novalux, Bluesky and Princess margarate rose which also exhibited better and more or less similar performance with respect to this character. Similar variation in durability of spike among 31 gladiolus varieties was reported by Kumar and Yadav (2005) who recorded more durability of spike in Snow Princess followed by Pusa Dhanvantri. The reason for

the same might be ascribed to possession of more number of florets per spike. Minimum time taken for opening of top floret was taken by Ivory Precillia (4.67 days) followed by Victorberge, Plumtart and Purpleflora which were at par with each other. (Table 3)

- **Length and Width of Floret**

Maximum length of floret was observed in Oscar (9.16cm) followed by NG-35, Friendship White, Victorberge, White Prosperity and Precillia which were statistically comparable with each other. On the other hand, minimum length was observed in Huntingsong (6.26 cm) followed by Wingsong without showing significant variation. (Table 3)

So far as width of floret was concerned, it was highest in Friendship White (8.03 cm) followed by Victorberge, White Prosperity, NG-35, Purpleflora and Oscar which were at par with each other while minimum value was recorded in Wingsong (5.30 cm). Considering both the parameters it was concluded that Purpleflora, White Prosperity, Victorberge, Friendship White, Oscar and NG-35 were better as compared to other varieties. Variation in size of florets with respect to length and width might be due to the difference in genetic makeup of the varieties.

- **Vaselif**

Vase life was highest in Novalux (7.11 days) followed by Jessica (6.77 days), Huntingsong (6.66 days), Princess margarate rose (6.22 days), Bluesky (6.11 days) and Precillia (6.11 days) while lowest was recorded in Victorberge (3.89 days). Other varieties recording lower vase life were NG-35 (4.44 days), Plumtart (4.99 days), Grandpics (4.99 days) and Charisma (5.0 days). The variation in vaselif may be attributed to the differential accumulation of carbohydrates due to varied leaf production and sensitivity of cultivars to ethylene. Variation in these aspects might also be due to genetical makeup of the plants (Horo *et al.*, 2009). Other workers such as Pasannavar (1994) and Gupta *et al* (2002) also reported similar results on the variation of vaselif of gladiolus cultivars. (Table 3)

- **Percentage Opening of Floret**

Significant variation was observed among the gladiolus varieties with respect to percentage opening of florets in individual spikes. Maximum percentage (95.15%) of buds opened in the spike of Princess margarate rose followed by NG-35 (93.20%), Ocillia (86.60%), Charisma (84.47%), Novalux (81.41%) and Grandpics (80.41%). However, these varieties were statistically comparable with each other. On the other hand varieties like Victorberge (44.66%), Purpleflora (53.68%) and Ivory Precillia exhibited poor performance with respect to this parameter. It may be mentioned that opening of florets in a spike is largely due to interaction of higher water potential and reserve carbohydrate maintained in the floral spike in addition to the environmental factors like light and temperature. In absence of use of any floral preservative as bud opening solution the variation observed in interaction effect of above factors influencing bud opening might be due to difference in the inherent character of varieties. (Table 3)

- **Longevity of Open Floret**

Longevity of open floret was observed to be highest in White Prosperity in which the florets lasted for 2.66 days. Other varieties showing higher longevity were Princess margarate rose (2.52 days), Victorberge (2.49 days), NG-35 (2.44 days), Oscar (2.40 days) and Charisma (2.30 days) and the performance of all these varieties were more or less comparable with each other. On the other hand all other varieties except Huntingsong had poor performance with respect to this character ranging from 1.68 days in Mascagni to 2.17 days in Grandpics. However, Huntingsong exhibited longevity

for a moderate period i.e. 2.07 days. Longevity of floret is an important parameter which also contributes to the post harvest life of gladiolus spike. In absence of use of any floral preservative, the variation in longevity of floret as observed in the present study might be due to difference in genetical makeup of the varieties. (Table 3)

CONCLUSIONS

Gladiolus genotypes varied significantly with respect to post harvest behavior. Varieties like White prosperity, NG-35, Friendship white, Victorberge, Oscar and Jessica exhibited better performance with respect to water uptake and gain in fresh weight up to 7th day of study, while Novalux, Huntingsong, Princess margarate rose, Bluesky and Precillia recorded greater vase life (7.11-6.11 days). Varieties like Charisma, Grandpics, Ocillia, Novalux, Princess margarate rose performed better with respect to opening of top floret and per cent opening of floret in a spike while varieties such as Purpleflora, White prosperity, Victorberge, Friendship white, Oscar and NG-35 recorded bigger florets with more length and width.

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APPENDICES

Table 1: Post Harvest Response of Gladiolus Varieties with Respect to % Water Uptake by Flower Spike

Variety	Name	3 rd Day	5 th Day	7 th Day	9 th Day
V ₁	Purpleflora	1.62	3.24	3.94(11.45)	4.86
V ₂	Huntingsong	1.07	2.67	3.33(8.10)	-
V ₃	Bluesky	2.70	4.21	4.96(12.86)	5.40
V ₄	White Prosperity	1.09	1.65	2.80(9.58)	3.57
V ₅	Jessica	1.09	3.84	4.05(11.54)	-
V ₆	Victorberge	2.53	4.56	4.86(12.73)	-
V ₇	Precillia	1.57	2.62	3.08(10.12)	-
V ₈	Plumtart	1.23	2.46	3.47(10.73)	-
V ₉	Friendship White	3.53	4.54	6.50(14.77)	-
V ₁₀	Ocillia	2.04	3.06	3.80(11.24)	-
V ₁₁	Traderhorn	2.15	2.87	3.63(10.99)	-
V ₁₂	Novalux	1.54	3.61	4.02(11.56)	-
V ₁₃	Princess margarate rose	1.01	1.51	2.57(9.20)	-
V ₁₄	Grandpic	3.95	5.65	6.09(14.26)	7.34
V ₁₅	Charisma	3.14	5.75	6.59(14.66)	8.94
V ₁₆	Wingsong	1.06	1.60	2.47(8.28)	-
V ₁₇	Mascagni	1.84	2.45	3.78(8.81)	-
V ₁₈	Ivory Precillia	2.09	3.14	3.98(9.11)	4.71
V ₁₉	Oscar	3.00	3.50	4.76(12.59)	-

Table 1:Contd.,

V ₂₀	NG 35	4.57	6.28	6.84(15.14)	-
SEm ±				1.298	
CD(5%)				3.672	

Figures in parentheses indicate angular values

Table 2: Post Harvest Response of Gladiolus Varieties With Respect to % Fresh Weight Gain by Flower Spike

Variety	Name	3 rd Day	5 th Day	7 th Day	9 th Day
V ₁	Purpleflora	16.66	16.66	6.66(8.85)	-
V ₂	Huntingsong	16.66	20.00	23.33(28.85)	25.00
V ₃	Bluesky	14.28	28.57	4.76(7.40)	-
V ₄	White Prosperity	25.00	33.33	43.33(41.15)	-
V ₅	Jessica	16.66	23.33	27.77(30.53)	-
V ₆	Victorberge	12.50	16.66	20.83(26.90)	25.00
V ₇	Precillia	16.66	33.33	50.00(45.00)	-
V ₈	Plumtart	16.66	33.33	16.66(19.78)	-
V ₉	Friendship White	25.00	33.33	47.61(43.63)	-
V ₁₀	Ocellia	11.11	16.66	20.37(25.98)	-
V ₁₁	Traderhorn	16.66	33.33	42.85(40.77)	50.00
V ₁₂	Novalux	11.11	14.28	18.88(25.74)	28.57
V ₁₃	Princess margarate rose	14.28	28.57	42.06(40.38)	-
V ₁₄	Grandpics	6.66	8.33	8.12(13.40)	-
V ₁₅	Charisma	16.66	18.88	20.63(22.52)	-
V ₁₆	Wingsong	12.5	16.66	18.09(20.48)	-
V ₁₇	Mascagni	20.00	40.00	40.00(39.23)	-
V ₁₈	Ivory Precillia	11.11	14.28	6.66(8.85)	-
V ₁₉	Oscar	14.28	28.57	30.95(33.17)	-
V ₂₀	NG 35	16.66	33.33	33.33(34.78)	-
SEm ±				6.306	
CD(5%)				17.835	

Figures in parentheses indicate angular values

Table 3: Post Harvest Response of Gladiolus Varieties with Respect to Days Taken for Opening of Top Floret, Length of Floret (Cm), Width of Floret (Cm), Vase Life, % Opening of Floret, Longevity of Open Floret

Variety	Name	Days Taken for Opening of Top Floret	Length of Floret(Cm)	Width of Floret(Cm)	Vase Life	% Opening of Floret	Longevity of Open Floret
V ₁	Purpleflora	5.88	8.22	7.38	5.77	53.68	2.01
V ₂	Huntingsong	7.05	6.26	5.83	6.66	72.49	2.07
V ₃	Bluesky	7.89	8.24	7.13	6.11	66.17	1.71
V ₄	White Prosperity	6.44	8.55	7.61	6.55	73.69	2.66
V ₅	Jessica	7.66	6.94	5.52	6.77	65.12	2.04
V ₆	Victorberge	5.77	8.89	7.66	3.89	44.66	2.49
V ₇	Precillia	7.33	8.55	7.11	6.11	64.16	1.82
V ₈	Plumtart	5.77	8.13	7.11	4.99	67.44	1.72
V ₉	Friendship White	6.55	9.05	8.03	5.77	72.21	2.05
V ₁₀	Ocellia	8.22	8.44	6.72	5.44	86.60	1.89
V ₁₁	Traderhom	6.66	8.07	7.07	5.55	63.93	1.97
V ₁₂	Novalux	8.11	7.94	6.61	7.11	81.41	1.98
V ₁₃	Princess margaraterose	7.77	8.60	7.27	6.22	95.15	2.52
V ₁₄	Grandpics	8.44	8.22	6.80	4.99	80.41	2.17
V ₁₅	Charisma	8.88	8.44	6.77	5.00	84.47	2.30
V ₁₆	Wingsong	7.33	6.55	5.30	5.22	74.56	1.91
V ₁₇	Mascagni	7.55	6.96	5.69	5.33	92.83	1.68
V ₁₈	Ivory Precillia	4.67	8.16	7.28	5.77	57.24	2.01
V ₁₉	Oscar	7.66	9.16	7.38	5.55	72.02	2.40
V ₂₀	NG 35	7.22	9.11	7.58	4.44	93.20	2.44
SEm ±		0.395	0.235	0.241	0.413	5.265	0.134
CD(5%)		1.118	0.666	0.682	1.167	14.888	0.379

